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**PLANT-PROTECTION COMPOSITIONS**
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- (56) Prior Art Documents  
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**AU 642788 88259/91 A01N 25/30**
- (57) Claim
1. Aqueous compositions of water-soluble plant-protection active substance, characterised in that they contain at least one water-soluble plant-protection active substance, sucroglycerides, at least one surfactant and water.
  2. Compositions according to claim 1, characterised in that the water-soluble plant-protection active substance is selected from the soluble salts of the various parent substances mentioned below, obtained by neutralising the acid functions of glyphosate, of glufosinate of 2,4-D, of 2,4-DES, of MCPA, of mecoprop, of acifluorfen, of clopyralid or of MSMA with an alkali metal hydroxide, an amine or an alkanolamine, or by neutralising the amine functions of guazatine or of paraquat using an inorganic acid such as hydrochloric acid or sulphuric acid or an organic acid such as acetic acid.

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5. Compositions according to one of claims 1 or 4, characterised in that the water-soluble plant-protection active substance is selected from :

- manganese sulphate,
- magnesium sulphate,
- the manganese complex of the disodium salt of ethylenediamine tetraacetic acid (EDTA),
- the copper complex of the disodium salt of EDTA,
- the zinc complex of the disodium salt of EDTA,
- the cobalt complex of the disodium salt of EDTA,
- the manganese complex of the dipotassium salt of EDTA.

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AUSTRALIA

PATENTS ACT 1990

C O M P L E T E      S P E C I F I C A T I O N

FOR A STANDARD PATENT

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Invention Title: "PLANT-PROTECTION COMPOSITIONS"

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The following statement is a full description of this invention,  
including the best method of performing it known to us:-

PLANT-PROTECTION COMPOSITIONS

The present invention relates to new plant-protection compositions and to their use for the treatment of plants.

5           Plant-protection active substances, such as insecticides, germicides, herbicides, fungicides, acaricides, nematocides, molluscicides, rodenticides, attractants, repellents and combinations of several of these compounds, are generally insoluble in water.

10           There are, however, some plant-protection active substances which are water-soluble. They are generally salt derivatives of active substances.

Other compounds can also be present in plant protection compositions : they are micronutrients. They are generally metallic salts or chelates, which are soluble in water.

15           By convenience, in this text the expression "plant-protection active substance" or simply "active substance" encompasses also these water-soluble micronutrients.

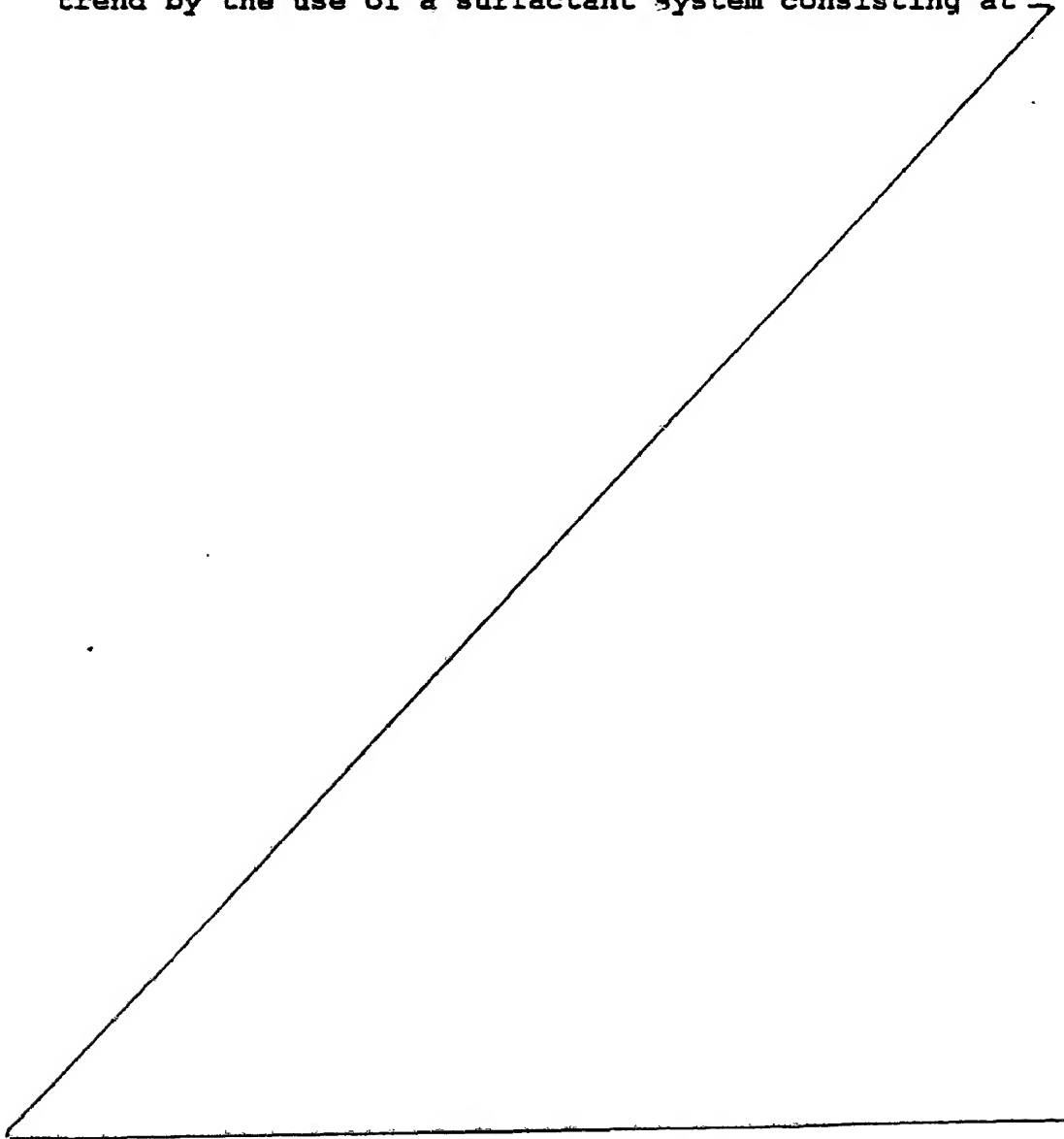
20           In the present text, water-soluble active substance is understood to mean a plant-protection active substance having a solubility in water at room temperature (approximately 20°C) of not less than 10 grams per litre.

25           Despite their solubility in water, these active substances need, for better utilisation and for greater efficacy, to be employed in the form of aqueous compositions containing one or more formulation additives, and more especially one or more surfactants.

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The increasingly earnest attention being paid to the various problems of pollution of the environment is leading to a search for plant-protection compositions of increasingly lower toxicity.

5 The present invention contributes to this trend by the use of a surfactant system consisting at



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least partially of non-toxic, non-irritant and biodegradable compounds.

The emulsifying and dispersant character of sucroglycerides is known, for preparing aqueous dispersed systems of fats.

Sucroglycerides are mixtures of products obtained by transesterification of natural or synthetic triglycerides with sucrose. These mixtures essentially contain monoglycerides, diglycerides, small amounts of non-transesterified triglycerides and sucrose monoesters and diesters.

Patent EP-A-0,091,331, which describes a process for preparing fluid sucroglycerides, also points out that the said sucroglycerides have surfactant properties which may be used, in particular, for the preparation of emulsions of essential oils or refatted low-fat milk. Lecithins and fluid oils may also be combined with the sucroglycerides.

Patent CH 423,442 describes a process for preparing emulsions of oils or of solid fats in water, using sucroglycerides and a lecithin as an emulsifying system.

The present invention consists in using this emulsifying power of sucroglycerides for obtaining compositions of plant-protection active substances, as well as the capacity of sucroglycerides to modify the bioavailability of the active substances.

More specifically, the present invention

hence relates, in the first place, to aqueous compositions of water-soluble plant-protection active substance, characterised in that they contain at least one water-soluble plant-protection active substance, sucroglycerides, at least one surfactant and water.

Among water-soluble plant-protection active substances, the following may be mentioned by way of non-limiting examples:

- glyphosate, in the form of its isopropylamine salt or its sodium salt,
- glufosinate, in the form of its ammonium salt,
- 2,4-D, in the form of its 2-hydroxyethyl-ammonium, dimethylammonium or tris(2-hydroxyethyl-ammonium) salt,
- 2,4-DES, in the form of its sodium salt,
- guazatine, in the form of its triacetate,
- MCPA, in the form of its sodium, potassium or dimethylammonium salt,
- mécoprop, in the form of its sodium or potassium salt,
- acifluorfen, in the form of its sodium or potassium salt,
- clopyralid, in the form of a 2-hydroxy-ethylammonium or potassium salt,
- MSMA, in the form of its sodium salt,
- paraquat, in the form of its dichloride or its bis(methyl sulphate).

It is naturally possible, without departing from the scope of the invention, to use other soluble salts of the various parent substances mentioned above, which are obtained, generally speaking, by neutralising

5 the acid functions of the parent substances with an alkali metal hydroxide, an amine or an alkanolamine, or by neutralising the amine functions of the parent substances using an inorganic acid such as hydrochloric acid or sulphuric acid or an organic acid such as

10 acetic acid.

As an example of water-soluble plant-protection active substances, there can be also mentioned micronutrients such as :

- manganese sulphate,
- magnesium sulphate,

15 - the manganese complex of the disodium salt of ethylenediamine tetraacetic acid (EDTA),

- the copper complex of the disodium salt of EDTA,
- the zinc complex of the disodium salt of EDTA,
- the cobalt complex of the disodium salt of EDTA,

20 - the manganese complex of the dipotassium salt of EDTA.

It is possible to use several different water-soluble plant-protection active substances in the plant-protection compositions according to the present invention.

As stated above, the sucroglycerides

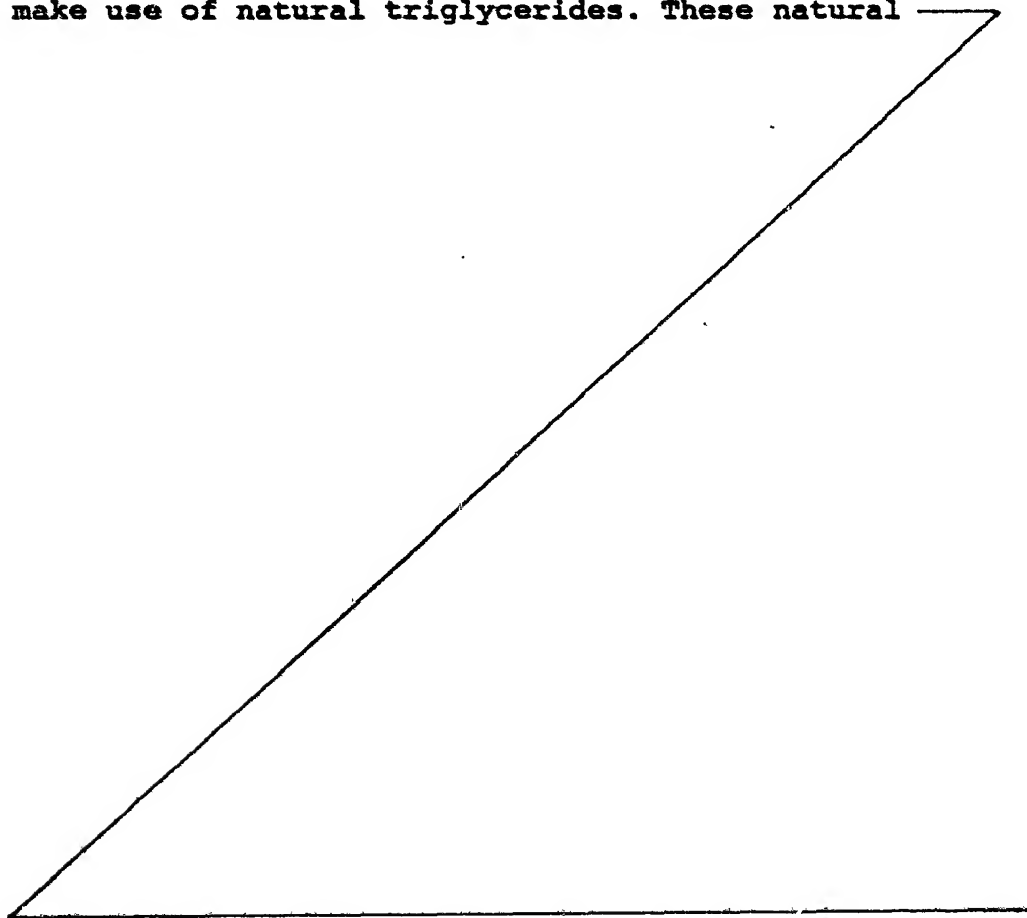
25 originate from transesterification of triglycerides with sucrose.

In the present text, the term "sucroglycerides" will be used in the plural, in order to indicate that they do not consist of one single chemical compound.



As triglycerides employed for the preparation of the sucroglycerides, triglycerides of saturated or unsaturated aliphatic acids having at least 4 carbon atoms are generally used. Preferably, the acids from which the triglycerides are derived have 10 to 20 carbon atoms.

The preparation of the sucroglycerides may be accomplished using synthetic triglycerides obtained by the reaction of glycerol and fatty acids. However, it is more advantageous from an economic standpoint to make use of natural triglycerides. These natural



triglycerides are mixtures of triglycerides.

As an example of such natural triglycerides, there may be mentioned lard, tallow, groundnut oil, butter oil, cotton seed oil, linseed oil, olive oil, palm oil, grape pip oil, fish oil, soybean oil, castor oil, rapeseed oil, copra oil and coconut oil.

In the present invention, the sucroglycerides used originate, in particular, from palm oil, lard, copra oil, tallow, rapeseed oil or castor oil.

They take either liquid form, such as the sucroglycerides of rapeseed oil or of castor oil, or the form of more or less consistent pastes, differentiated from one another, in particular, by their melting point:

- 15               - lard sucroglycerides               : 47 to 50°C
- tallow sucroglycerides            : 50 to 55°C
- palm oil sucroglycerides          : 55 to 58°C
- copra oil sucroglycerides         : 30 to 32°C.

A procedure for preparing the sucroglycerides is described in Patent FR-A-2,463,512.

It is possible to use several different sucroglycerides in the aqueous emulsion in order, in particular, to employ their different specific properties.

25               Generally, the compositions of the invention contain from 0.1 % to 40 % by weight of sucroglycerides relative to the total weight of the composition, and preferably from 1 % to 30 % weight/weight.

The surfactants which participate in the composition of the invention with the sucroglycerides can be ionic and/or nonionic.

Although sucroglycerides are surfactant compounds, the term surfactant in the present text will be reserved for surfactants other than the said sucroglycerides.

Among ionic surfactants, there may be mentioned anionic surfactants such as, in particular:

- 10 - phosphoric esters of alkoxyated fatty alcohols, of alkoxyated fatty acids, of alkoxyated alkylphenols, of alkoxyated bis(1-phenylethyl)phenols, of alkoxyated tris(1-phenylethyl)phenols;
- 15 - sulphuric esters of alkoxyated fatty alcohols, of alkoxyated alkylphenols, of alkoxyated bis(1-phenylethyl)phenols, of alkoxyated tris(1-phenylethyl)phenols;

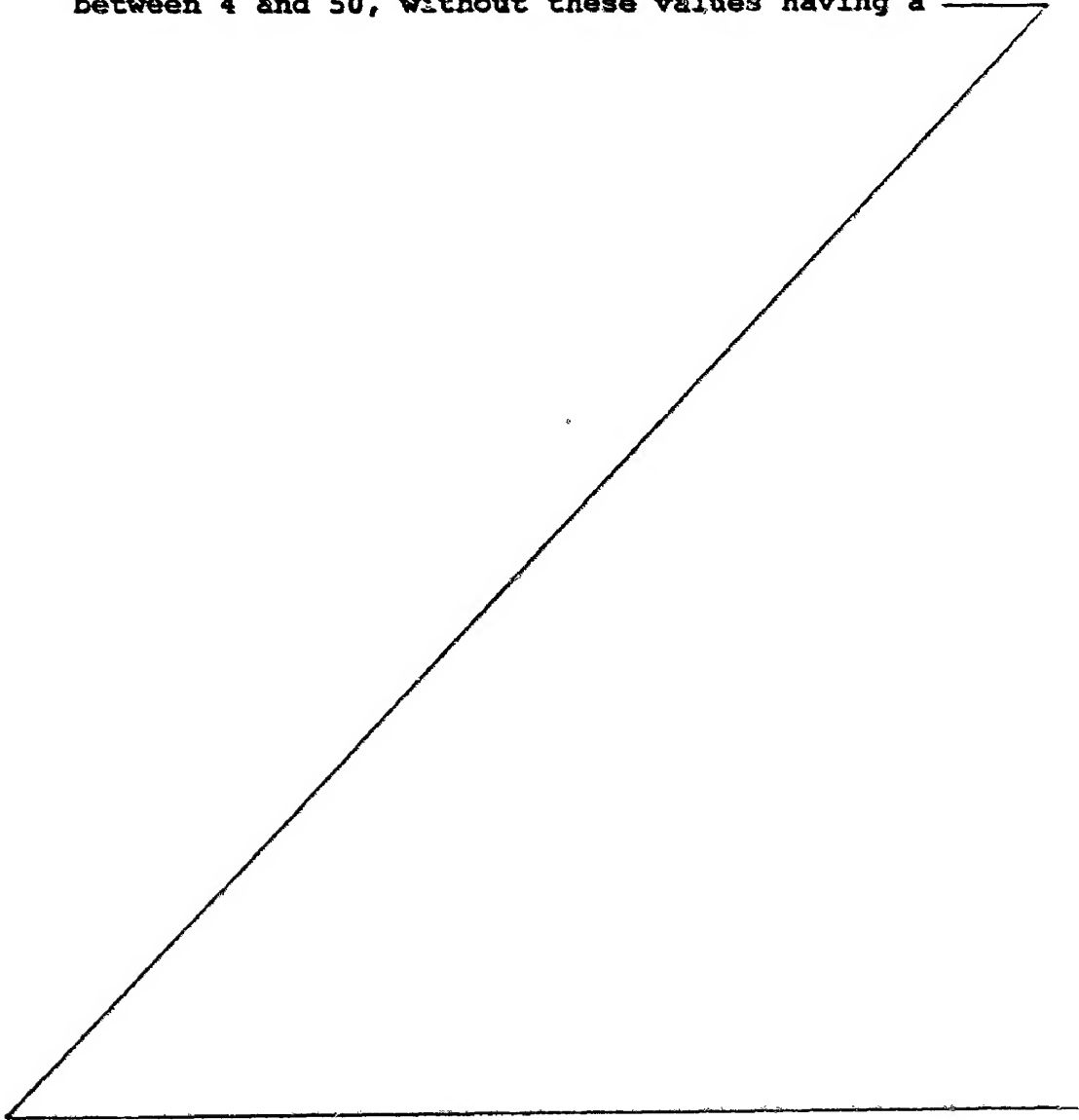
the unesterified function or functions of the phosphoric acid or sulphuric acid can be in acid form

- 20 or in the form of a sodium, potassium, ammonium, amine or alkanolamine salt;
- alkylarylsulfonates such as alkylbenzene-sulfonates and alkylnaphtalene-sulfonates of sodium, potassium, calcium, ammonium, amine or alkanolamine ;
- 25 - alkylsulfates of sodium, potassium, ammonium, amine or alkanolamine ;
- alkyl(polyoxyalkylene)sulfates of sodium, potassium, ammonium, amine or alkanolamine.

The alkoxy units of these anionic surfactants are oxyethylene (OE) and/or oxypropylene (OP) units.

They usually vary in number from 2 to 100 according to the desired HLB (hydrophilic-lipophilic balance).

Preferably, the number of alkoxy units lies between 4 and 50, without these values having a



critical significance.

The alkoxyated fatty alcohols from which the above phosphoric and sulphuric esters are derived generally have from 6 to 22 carbon atoms, the alkoxy  
5 units being excluded from these numbers.

The alkoxyated alkylphenols from which the above phosphoric and sulphuric esters are derived generally contain 1 or 2 linear or branched alkoxy groups having from 4 to 12 carbon atoms, in particular  
10 octyl, nonyl or dodecyl groups.

When the unesterified functions of the phosphoric acid or sulphuric acid of the above esters are salified, they are most often salified in the form of sodium, potassium, ammonium, butylamine,  
15 isopropylamine, N-methylcyclohexylamine or triethanolamine salts, without these examples being limiting.

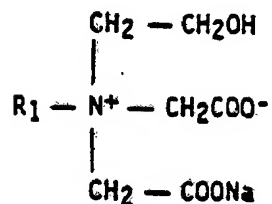
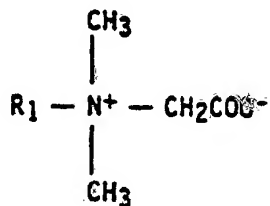
By way of particular examples of anionic surfactants, the following may be mentioned, in  
20 particular:

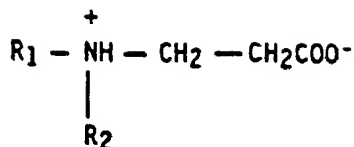
- the triethanolamine salts of the phosphoric monoester and diester of ethoxylated tris(1-phenylethyl)phenol with 16 OE units,
- the potassium salts of the phosphoric monoester and  
25 diester of ethoxylated tris(1-phenylethyl)phenol with 16 OE units,
- the acid sulphate of ethoxylated bis(1-phenylethyl)-phenol with 11 OE units,

- the potassium salt of the sulphuric monoester of ethoxylated bis(1-phenylethyl)phenol with 15 OE units,
- the triethanolamine salt of the sulphuric monoester of ethoxylated bis(1-phenylethyl)phenol with 11 OE units,
- 5 - the ammonium salt of the sulphuric monoester of ethoxylated tris(1-phenylethyl)phenol with 16 OE units,
- the acid phosphate of ethoxylated nonylphenol with 9 OE units,
- 10 - the dodecylbenzene sulfonate of sodium,
- the methylnaphtalene sulfonate of sodium,
- the lauryl sulfate of sodium,
- the lauryl ether sulfate of sodium with 3 OE units.

15 Among ionic surfactants, cationic or amphoteric surfactants such as betaines and imidazolines may also be mentioned.

The betaines are amphoteric surfactants of the following formulae:





in which:

- $R_1$  represents a linear or branched alkyl group having 3 to 18 carbon atoms, such as, for example, propyl, dodecyl or hexadecyl, or an alkanamido group such as, for example, dodecanamide,
- $R_2$  represents a hydrogen atom or a propionate group.

The imidazolines are compounds derived from imidazoline containing a linear or branched alkyl or alkenyl substituent having 6 to 20 carbon atoms on the carbon at the 2-position of the imidazoline ring and containing on the nitrogen atom at the 1-position one or more substituents such as hydroxyl, sodium alkanolate, (for example  $-CH_2CH_2ONa$ ), hydroxyalkyl (for example 2-hydroxyethyl), sodium alkylcarboxylate (for example  $-CH_2COONa$ ), sodium alkoxyalkylcarboxylate (for example  $-C_2H_4O-CH_2COONa$ ) or sodium hydroxyalkylsulphonate (for example  $-CH_2CHOH-CH_2SO_3Na$ ).

The above betaines and imidazolines are often mixtures of compounds for which the hydrophobic alkyl or alkenyl substituents originate from natural compounds such as, for example, copra oil.

The betaines are marketed, in particular, under the brand name ALKATERIC, the imidazolines under the brand names ALKAZINE and MIRANOL.

Among nonionic surfactants, the following may be mentioned:

- alkoxylated triglycerides,
- alkoxylated sorbitan esters,
- 5 - alkoxylated fatty acids,
- alkoxylated fatty alcohols,
- alkoxylated fatty amines,
- alkoxylated bis(1-phenylethyl)phenols,
- alkoxylated tris(1-phenylethyl)phenols,
- 10 - alkoxylated alkylphenols.

The alkoxy units of these various surfactants are oxyethylene (OE) and/or oxypropylene (OP) units, most frequently OE units.

They usually vary in number from 2 to 100 according to the desired HLB (hydrophilic/lipophilic balance). This HLB will generally be not less than 11.

Preferably, the number of alkoxy units lies between 4 and 50.

The alkoxylated triglycerides can be triglycerides of vegetable or animal origin (such as lard, tallow, groundnut oil, butter oil, cotton seed oil, linseed oil, olive oil, palm oil, grape pip oil, fish oil, soybean oil, castor oil, rapeseed oil, copra oil, coconut oil), preferably ethoxylated.

The alkoxylated fatty acids are esters of fatty acids (such as, for example, oleic acid, stearic acid), preferably ethoxylated.

The alkoxylated sorbitan esters are cyclised



sorbitol esters of C<sub>10</sub> to C<sub>20</sub> fatty acids such as lauric acid, stearic acid or oleic acid, preferably ethoxylated.

5 The term ethoxylated triglyceride relates, in the present invention, both to the products obtained by ethoxylation of a triglyceride with ethylene oxide and to those obtained by transesterification of a triglyceride with a polyethylene glycol.

10 Similarly, the term ethoxylated fatty acid includes both the products obtained by ethoxylation of a fatty acid with ethylene oxide and those obtained by esterification of a fatty acid with a polyethylene glycol.

15 The alkoxyated fatty amines generally have from 10 to 22 carbon atoms, the alkoxy units being excluded from these numbers, and are preferably ethoxylated.

20 The alkoxyated fatty alcohols generally have from 6 to 22 carbon atoms, the alkoxy units being excluded from these numbers and are preferably ethoxylated.

25 The alkoxyated alkylphenols generally have 1 or 2 linear or branched alkyl groups having 4 to 12 carbon atoms, in particular octyl, nonyl or dodecyl groups, and are preferably ethoxylated.

By way of examples of nonionic surfactants of the group comprising alkoxyated alkylphenols, alkoxyated bis(1-phenylethyl)phenols and alkoxyated

tris(1-phenylethyl)phenols, the following may be mentioned:

- ethoxylated bis(1-phenylethyl)phenol with 5 OE units,
- ethoxylated bis(1-phenylethyl)phenol with 10 OE units,
- ethoxylated tris(1-phenylethyl)phenol with 16 OE units,
- ethoxylated tris(1-phenylethyl)phenol with 20 OE units,
- ethoxylated tris(1-phenylethyl)phenol with 25 OE units,
- ethoxylated tris(1-phenylethyl)phenol with 40 OE units,
- ethoxy/propoxylated tris(1-phenylethyl)phenols with 25 OE + OP units,
- ethoxy/propoxylated nonylphenols with 25 OE + OP units,
- ethoxy/propoxylated nonylphenols with 30 OE + OP units,
- ethoxy/propoxylated nonylphenols with 40 OE + OP units,
- ethoxy/propoxylated nonylphenols with 55 OE + OP units,
- ethoxy/propoxylated nonylphenols with 80 OE + OP units.

The compositions of the invention can naturally comprise several ionic and/or nonionic surfactants.

In order to have plant-protection compositions which are as satisfactory as possible from the standpoint of biodegradability, it will be preferable to use, among the ionic surfactants described above, phosphoric esters of ethoxylated fatty alcohols in acid form or in the form of their salts, sulphuric esters of ethoxylated fatty alcohols in acid form or in the form of their salts, phosphoric esters of ethoxylated fatty acids in acid form or in the form of their salts, betaines and imidazolines, and among the nonionic surfactants described above, ethoxylated triglycerides, ethoxylated sorbitan esters, ethoxylated fatty alcohols and ethoxylated fatty acids.

The amount of surfactant used in the compositions according to the invention may be expressed as the weight ratio surfactant/sucroglycerides (the term surfactant in the present text not including the sucroglycerides).

The ratio is generally not less than 0.8, and is preferably from 1 to 5.

The compositions can contain, apart from the active substance, sucroglycerides, surfactants and water, various other constituents such as:

- an antifreeze,
- an antifoam such as organopolysiloxanes, for example,
- a wetting agent,
- a thickening agent,
- water soluble compounds,

- and auxiliary additives.

As wetting agents, the following may be mentioned, for example:

- surfactant compounds based on silicone, such as
- 5 copolymers of polydimethylsiloxane and of either a homopolymer of ethylene glycol or a copolymer of ethylene glycol and propylene glycol;
- fluorinated surfactant compounds such as compounds
- 10 containing a hydrophobic and oleophobic linear perfluorocarbon chain and a hydrophilic portion containing, for example, an acidic or neutralised sulphonic group, a carboxyl group or an ethoxylated alcohol residue.

Conventional antifreezes such as ethylene

15 glycol, propylene glycol, glycerol, diethylene glycol, triethylene glycol, tetraethylene glycol or urea may be used.

The antifreeze usually represents from 0 to

20 % by weight, relative to the weight of the

20 composition.

Water-soluble organic thickening agents, or those capable of swelling in water, such as polysaccharides of the xanthan gum type, alginates, carboxylated or hydroxylated methylcelluloses or

25 synthetic macromolecules of the polyacrylate, polymaleate, polyvinylpyrrolidone, polyethylene glycol or polyvinyl alcohol type, or inorganic thickening agents such as bentonites or silicas, may be used.

As water-soluble compounds, there can be mentioned in particular salts such as sodium sulphate or ammonium sulphate. Urea and its derivatives can also be mentioned.

The auxiliary additives which can be present are agents protecting against oxidation, UV rays or pH changes, colourings or bactericides.

The proportions, expressed in weight relative to the total weight of the composition, of the main constituents of the aqueous compositions of plant-protection active substances of the invention are generally as follows:

- from 1 % to 60 %, and preferably from 2 % to 40 % of plant-protection active substance,
- from 0.1 % to 40 %, and preferably from 1 % to 30 % of sucroglycerides,
- from 0.1 % to 40 %, and preferably from 1 % to 30 %, of ionic and/or nonionic surfactant,
- and water q.s.

The compositions of the invention may be prepared by mixing their various constituents with stirring.

It is, more often than not, preferable, on the one hand to dissolve the plant-protection active substance in water, and on the other hand to prepare a mixture of the sucroglycerides, the ionic and/or nonionic surfactant or surfactants and the possible other additives in water with stirring.

The antifreeze, when present, is then added with stirring to the emulsion of sucroglycerides, and the solution of active substance is thereafter introduced in its turn.

In order to obtain a better homogeneity of the composition, the latter may then be transferred to an ultrasonic apparatus for one to a few minutes.

The compositions of the invention are stable  
5 for several months in a temperature range from  $-5^{\circ}\text{C}$  to  $45^{\circ}\text{C}$ , both at a given temperature and when they are subjected to temperature cycles. No recrystallisation, sedimentation or coalescence phenomenon has been observed on storage.

10 They are used for the treatment of plants, where appropriate after dilution with water or after mixing with aqueous suspensions, aqueous emulsions or aqueous suspo-emulsions of other active substances.

They occupy a very good position from the  
15 ecotoxicological standpoint, since they do not contain an organic solvent, and the sucroglycerides they contain are especially non-toxic and biodegradable compounds which enable, in addition, the  
20 bioavailability of the active substances to be increased.

The examples which follow illustrate the invention.

EXAMPLE 1

Composition based on glyphosate isopropylamine salt.

25 The isopropylamine salt of glyphosate is a herbicide obtained by neutralisation of one of the free acid functions of glyphosate of formula:



200 g of a 60 % weight/weight aqueous solution of glyphosate isopropylamine salt are introduced into a first container.

In a second container, a mixture of:

- 5 - 125 g of ethoxylated fatty alcohol containing 10 OE units and having an HLB of 14
- 75 g of rapeseed oil sucroglycerides
- 510 g of demineralised water

is prepared.

- 10 The mixture obtained is stirred and 90 g of monopropylene glycol are added. While stirring is continued, the 200 g of aqueous solution of glyphosate isopropylamine salt are then introduced.

- 15 The composition thereby obtained is transferred for 1 minute to an ultrasonic apparatus at maximum power in order to improve the homogeneity.

The composition has a pH of 5.

The composition was stable:

- for more than 2 months at 45°C
- 20 - for more than 2 months in temperature cycles: 24 h at -5°C
- 24 h at +45°C.

## EXAMPLE 2

### Composition based on glyphosate isopropylamine salt.

- 25 Using the procedure described in Example 1, the following composition is prepared:

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- A 5x5 grid of dots forming the number 12345. The dots are arranged as follows: Row 1: (1,1), (1,2), (1,3), (1,4), (1,5); Row 2: (2,1), (2,2), (2,3), (2,4), (2,5); Row 3: (3,1), (3,2), (3,3), (3,4), (3,5); Row 4: (4,1), (4,2), (4,3), (4,4), (4,5); Row 5: (5,1), (5,2), (5,3), (5,4), (5,5).

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The composition was stable:



- for more than 2 months at 45°C
- for more than 2 months in temperature cycles: 24 h at -5°C  
24 h at +45°C.

#### 5 EXAMPLE 4

##### Composition based on glyphosate isopropylamine salt.

Using the procedure described in Example 1, the following composition is prepared:

- glyphosate isopropylamine salt (aqueous solution containing 60 % by weight) : 100 g
- phosphate of ethoxylated fatty alcohol, neutralised with potassium hydroxide : 50 g
- rapeseed oil sucroglycerides : 50 g
- xanthan gum (aqueous solution containing 2 % by weight) : 80 g
- demineralised water : 720 g

The composition has a pH of 5.3.

The composition was stable:

- for more than 2 months at 45°C
- for more than 2 months in temperature cycles: 24 h at -5°C  
24 h at +45°C.

#### EXAMPLE 5

##### Composition based on glyphosate isopropylamine salt.

Using the procedure described in Example 1, the following composition is prepared:

- glyphosate isopropylamine salt (aqueous solution containing 60 % by weight) : 182 g

- phosphate of ethoxylated fatty alcohol,  
neutralised with butylamine : 75 g
- ethoxylated fatty alcohol containing  
10 OE units (HLB = 14) : 45 g
- 5 - rapeseed oil sucroglycerides : 75 g
- demineralised water : 623 g

The composition has a pH of 5.

The composition was stable:

- for more than 2 months at 45°C
- 10 - for more than 2 months in temperature  
cycles: 24 h at -5°C  
24 h at +45°C.

#### EXAMPLE 6

#### Composition based on glyphosate isopropylamine salt.

- 15 Using the procedure described in Example 1,  
the following composition is prepared:
- glyphosate isopropylamine salt (aqueous  
solution containing 60 % by weight) : 230 g
  - phosphate of ethoxylated fatty alcohol,  
20 neutralised with potassium hydroxide : 80 g
  - rapeseed oil sucroglycerides : 58 g
  - xanthan gum (aqueous solution containing  
2 % by weight) : 74 g
  - demineralised water : 558 g

25 The composition has a pH of 5.

The composition was stable:

- for more than 2 months at 45°C
- for more than 2 months in temperature

cycles: 24 h at -5°C

24 h at +45°C.

#### EXAMPLE 7

##### Composition based on glyphosate isopropylamine salt.

5                    Using the procedure described in Example 1,  
the following composition is prepared:

- glyphosate isopropylamine salt (aqueous  
solution containing 60 % by weight) : 200 g
- phosphate of ethoxylated fatty alcohol,  
10        neutralised with isopropylamine : 50 g
- ethoxylated fatty alcohol containing  
10 OE units (HLB = 14) : 50 g
- rapeseed oil sucroglycerides : 75 g
- monopropylene glycol : 94 g
- 15        - demineralised water : 531 g

The composition has a pH of 5.

The composition was stable:

- for more than 2 months at 45°C
- for more than 2 months in temperature
- 20                    cycles: 24 h at -5°C
- 24 h at +45°C.

#### EXAMPLE 8

##### Composition based on glyphosate isopropylamine salt.

25                    Using the procedure described in Example 1,  
the following composition is prepared:

- glyphosate isopropylamine salt (aqueous  
solution containing 60 % by weight) : 195 g
- phosphate of ethoxylated fatty alcohol,

	neutralised with isopropylamine	: 73 g
	- ethoxylated fatty alcohol containing 10 OE units (HLB = 14)	: 73 g
	- copra oil sucroglycerides	: 73 g
5	- monopropylene glycol	: 88 g
	- demineralised water	: 498 g

The composition has a pH of 5.

The composition was stable:

- for more than 2 months at 45°C
- 10 - for more than 2 months in temperature  
cycles: 24 h at -5°C  
24 h at +45°C.

#### EXAMPLE 9

Composition based on glyphosate isopropylamine salt.

15	Using the procedure described in Example 1, the following composition is prepared:	
	- glyphosate isopropylamine salt (aqueous solution containing 60 % by weight)	: 190 g
	- phosphate of ethoxylated fatty alcohol, neutralised with butylamine	: 57 g
20	- ethoxylated fatty alcohol containing 10 OE units (HLB = 14)	: 57 g
	- copra oil sucroglycerides	: 72 g
	- monopropylene glycol	: 133 g
25	- demineralised water	: 491 g

The composition has a pH of 5.

The composition was stable:

- for more than 2 months at 45°C

- for more than 2 months in temperature cycles: 24 h at -5°C
- 24 h at +45°C.

EXAMPLE 105 Composition based on glyphosate isopropylamine salt.

Using the procedure described in Example 1, the following composition is prepared:

- glyphosate isopropylamine salt (aqueous solution containing 60 % by weight) : 200 g
- 10 - ethoxylated castor oil containing 54 OE units : 200 g
- rapeseed oil sucroglycerides : 100 g
- monopropylene glycol : 90 g
- demineralised water : 410 g

15 The composition has a pH of 5.

The composition was stable:

- for more than 2 months at 45°C
- for more than 2 months in temperature cycles: 24 h at -5°C
- 20 24 h at +45°C.

EXAMPLE 11Composition based on glyphosate isopropylamine salt.

Using the procedure described in Example 1, the following composition is prepared:

- 25 - glyphosate isopropylamine salt (aqueous solution containing 60 % by weight) : 190 g
- ethoxylated sorbitan monooleate containing 20 OE units (HLB = 15) : 238 g

- rapeseed oil sucroglycerides : 143 g
- monopropylene glycol : 95 g
- demineralised water : 334 g

The composition has a pH of 5.

5

The composition was stable:

- for more than 2 months at 45°C
- for more than 2 months in temperature cycles: 24 h at -5°C  
24 h at +45°C.

#### 10 EXAMPLE 12

Composition based on glyphosate isopropylamine salt.

Using the procedure described in Example 1, the following composition is prepared:

- glyphosate isopropylamine salt (aqueous solution containing 60 % by weight) : 190 g
- ethoxylated sorbitan monooleate containing 20 OE units (HLB = 15) : 60 g
- phosphate of ethoxylated fatty alcohol, neutralised with isopropylamine : 60 g
- 20 - rapeseed oil sucroglycerides : 75 g
- monopropylene glycol : 90 g
- demineralised water : 525 g

The composition has a pH of 5.

The composition was stable:

25

- for more than 2 months at 45°C
- for more than 2 months in temperature cycles: 24 h at -5°C  
24 h at +45°C.

**EXAMPLE 13****Composition based on glyphosate isopropylamine salt.**

Using the procedure described in Example 1, the following composition is prepared:

- |    |   |         |
|----|---|---------|
| 5  | - glyphosate isopropylamine salt (aqueous solution containing 60 % by weight) | : 190 g |
|    | - ethoxylated sorbitan monooleate containing 20 OE units (HLB = 15)           | : 190 g |
|    | - phosphate of ethoxylated fatty alcohol,                                     |         |
| 10 | neutralised with butylamine   | : 48 g  |
|    | - rapeseed oil sucroglycerides  | : 143 g |
|    | - monopropylene glycol  | : 95 g  |
|    | - demineralised water   | : 334 g |

The composition has a pH of 5.

15

The composition was stable:

- for more than 2 months at 45°C
- for more than 2 months in temperature cycles: 24 h at -5°C  
24 h at +45°C.

20

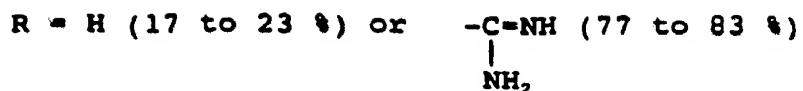
**EXAMPLE 14****Composition based on guazatine triacetate.**

Guazatine triacetate is a fungicide obtained by neutralisation using acetic acid of guazatine of formula:

25



with: n = 0, 1 or 2



Using the procedure described in Example 1,  
the following composition is prepared:

- |    |   |         |
|----|---|---------|
| 5  | - guazatine triacetate (aqueous<br>solution containing 70 % by weight)                                  | : 300 g |
|    | - ethoxylated copra oil containing<br>28 OE units   | : 58 g  |
|    | - ethoxylated castor oil containing<br>18 OE units  | : 58 g  |
| 10 | - disodium 2-undecyl-1-hydroxy-1-<br>(carboxylatomethyl)-1-<br>[2-(carboxylatomethoxy)ethyl]imidazoline | : 175 g |
|    | - rapeseed oil sucroglycerides  | : 58 g  |
| 15 | - demineralised water   | : 351 g |

The composition has a pH of 5.

The composition was stable:

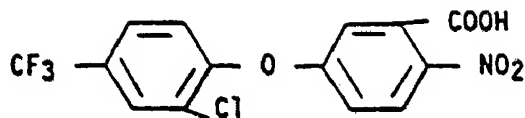
- for more than 2 months at 45°C
- for more than 2 months in temperature  
cycles: 24 h at -5°C  
24 h at +45°C.

#### EXAMPLE 15

Composition based on glyphosate isopropylamine salt and  
acifluorfen sodium salt.

- 25           The sodium salt of acifluorfen is a herbicide  
obtained by neutralisation with sodium hydroxide of  
acifluorfen of formula:





Using the procedure described in Example 1,  
the following composition is prepared:

- |    |   |         |
|----|---|---------|
|    | - glyphosate isopropylamine salt (aqueous solution containing 60 % by weight) | : 175 g |
| 5  | - acifluorfen sodium salt (aqueous solution containing 21 % by weight)        | : 75 g  |
|    | - phosphate of ethoxylated fatty alcohol, neutralised with butylamine         | : 75 g  |
|    | - ethoxylated fatty alcohol containing  |         |
| 10 | 10 OE units (HLB = 14)  | : 50 g  |
|    | - rapeseed oil sugroglycerides  | : 100 g |
|    | - monopropylene glycol  | : 90 g  |
|    | - demineralised water   | : 435 g |

The composition has a pH of 5.

15

The composition was stable:

- for more than 2 months at 45°C
- for more than 2 months in temperature cycles: 24 h at -5°C  
24 h at +45°C.

**EXAMPLE 16****Composition based on glyphosate isopropylamine salt**

Using the procedure described in Example 1,  
the following composition is prepared :

- 5 - glyphosate isopropylamine salt : 80 g  
(expressed in the acid form of glyphosate)
- ethoxylated fatty alcohol containing 10 OE units  
(HLB - 14) : 45 g
- phosphate of ethoxylated fatty alcohol,  
10 neutralised with isopropylamine : 75 g
- copra oil sucroglycerides : 80 g
- demineralised water : quantity for 1000 cm<sup>3</sup>

The composition has un pH of 4.8.

The composition was stable :

- 15 - for more than 2 months at 45°C
- for more than 2 months in temperature  
cycles : 24 h at - 5°C  
24 h at + 45°C.

- 20 The composition was homogeneous and did not separate  
into different phases on storage during a long time. By dilution  
with water it gave a stable opalescent solution.

**EXAMPLE 17****Composition based on glyphosate isopropylamine salt**

- 25 Using the procedure described in Example 1,  
the following composition is prepared :

- glyphosate isopropylamine salt : 90 g  
(expressed in the acid form of glyphosate)
- ethoxylated fatty alcohol containing 10 OE units  
(HLB - 14) : 120 g

- copra oil sucroglycerides : 90 g
- monopropylene glycol : 150 g
- demineralised water : quantity for 1000 cm<sup>3</sup>

The composition has un pH of 5.1.

5 The composition was stable :

- for more than 2 months at 45°C
- for more than 2 months in temperature cycles : 24 h at - 5°C  
24 h at + 45°C.

10 The composition was homogeneous and did not separate into different phases on storage during a long time. By dilution with water it gave a stable opalescent solution.

#### EXAMPLE 18

#### Composition based on glyphosate isopropylamine salt

15 Using the procedure described in Example 1, the following composition is prepared :

- glyphosate isopropylamine salt : 90 g  
(expressed in the acid form of glyphosate)
- ethoxylated fatty alcohol containing 10 OE units  
(HLB - 14) : 60 g
- phosphate of ethoxylated fatty alcohol,  
neutralised with isopropylamine : 60 g
- copra oil sucroglycerides : 90 g
- urea : 300 g
- 25 - demineralised water : quantity for 1000 cm<sup>3</sup>

The composition has un pH of 6.3.

The composition was stable :

- for more than 2 months at 45°C
- for more than 2 months in temperature

30

cycles : 24 h at - 5°C

24 h at + 45°C.

The composition was homogeneous and did not separate into different phases on storage during a long time. By dilution with water it gave a stable opalescent solution.

#### EXAMPLE 19

##### Composition based on glyphosate isopropylamine salt

Using the procedure described in Example 1,  
the following composition is prepared :

- |    |  |   |                                   |
|----|--|---|-----------------------------------|
| 10 | - glyphosate isopropylamine salt                   | : | 110 g                             |
|    | (expressed in the acid form of glyphosate)         |   |                                   |
|    | - ethoxylated fatty alcohol containing 10 OE units |   |                                   |
|    | (HLB - 14)   | : | 75 g                              |
|    | - phosphate of ethoxylated fatty alcohol,          |   |                                   |
| 15 | neutralised with isopropylamine                    | : | 75 g                              |
|    | - copra oil sucroglycerides                        | : | 110 g                             |
|    | - monopropylene glyco                              | : | 180 g                             |
|    | - demineralised water :                            |   | quantity for 1000 cm <sup>3</sup> |

The composition has un pH of 5.8.

20 The composition was stable :

- for more than 2 months at 45°C
- for more than 2 months in temperature cycles : 24 h at - 5°C

24 h at + 45°C.

25 The composition was homogeneous and did not separate into different phases on storage during a long time. By dilution with water it gave a stable opalescent solution.

**EXAMPLE 20****Composition based on glyphosate isopropylamine salt**

Using the procedure described in Example 1,  
the following composition is prepared :

- 5 - glyphosate isopropylamine salt : 90 g  
(expressed in the acid form of glyphosate)
- ethoxylated fatty alcohol containing 10 OE units  
(HLB - 14) : 90 g
- 10 - phosphate of ethoxylated fatty alcohol,  
neutralised with isopropylamine : 90 g
- copra oil sucroglycerides : 126 g
- urea : 300 g
- demineralised water : quantity for 1000 cm<sup>3</sup>

The composition has un pH of 5.9.

- 15 The composition was stable :

- for more than 2 months at 45°C
- for more than 2 months in temperature  
cycles : 24 h at - 5°C  
24 h at + 45°C.

- 20 The composition was homogeneous and did not separate  
into different phases on storage during a long time. By dilution  
with water it gave a stable opalescent solution.

**EXAMPLE 21****Composition based on glyphosate isopropylamine salt**

- 25 Using the procedure described in Example 1,  
the following composition is prepared :

- glyphosate isopropylamine salt : 90 g  
(expressed in the acid form of glyphosate)

- ethoxylated fatty alcohol containing 10 OE units  
(HLB - 14) : 60 g
- phosphate of ethoxylated fatty alcohol,  
neutralised with isopropylamine : 60 g
- 5 - rapeseed oil sucroglycerides : 90 g
- urea : 300 g
- demineralised water : quantity for 1000 cm<sup>3</sup>

The composition has un pH of 5.9.

The composition was stable :

- 10
- for more than 2 months at 45°C
  - for more than 2 months in temperature  
cycles : 24 h at - 5°C  
24 h at + 45°C.

- 15
- The composition was homogeneous and did not separate into different phases on storage during a long time. By dilution with water it gave a stable opalescent solution.

#### EXAMPLE 22

##### Composition based on manganese sulfate

- 20
- Using the procedure described in Example 1 (with replacing the glyphosate isopropylamine salt by manganese sulfate), the following composition is prepared (the percentages are in weight by weight) :

- aqueous solution of manganese sulfate at 34 %  
in weight by weight (corresponding to 11 % of Mn) : 59 %
- 25 - copra oil sucroglycerides : 6 %
- sodium lauryl sulfate : 6 %
- demineralised water : 29 %

The composition has a pH of 5.7.

- 

25

The composition was stable :

- for more than 2 months at 45°C
- for more than 2 months in temperature cycles : 24 h at 0°C

## 24 h at + 45°C.

15	- aqueous solution of manganese sulfate at 34 %		
	in weight by weight (corresponding to 11 % of Mn)	:	54 %
	- copra oil sucroglycerides	:	7 %
	- sodium lauryl sulfate	:	4 %
	- monopropylene glycol	:	10 %
20	- demineralised water :	:	25 %

The composition has a pH of 5.7.

The composition was stable :

- for more than 2 months at 45°C
- for more than 2 months in temperature cycles : 24 h at 0°C

24 h at + 45°C.

The composition was homogeneous and did not separate into different phases on storage during a long time. By dilution with water it gave a stable opalescent solution.

#### EXAMPLE 24

##### 5 Composition based on manganese sulfate

Using the procedure described in Example 1 (with replacing the glyphosate isopropylamine salt by manganese sulfate), the following composition is prepared (the percentages are in weight by weight) :

- |    |   |         |
|----|---|---------|
| 10 | - aqueous solution of manganese sulfate at 34 %   |         |
|    | in weight by weight (corresponding to 11 % of Mn) | : 50 %  |
|    | - copra oil sucroglycerides                       | : 3 %   |
|    | - sodium lauryl sulfate                           | : 1.5 % |
|    | - sodium lauryl ether sulfate (with 3 OE units)   | : 1.5 % |
| 15 | - monopropylene glycol                            | : 12 %  |
|    | - demineralised water :                           | : 32 %  |

The composition has a pH of 5.7.

The composition was stable :

- |    |   |
|----|---|
| 20 | - for more than 2 months at 45°C        |
|    | - for more than 2 months in temperature |
|    | cycles : 24 h at 0°C                    |
|    | 24 h at + 45°C.                         |

The composition was homogeneous and did not separate into different phases on storage during a long time. By dilution with water it gave a stable opalescent solution.



**EXAMPLE 25****Composition based on manganese sulfate**

Using the procedure described in Example 1

(with replacing the glyphosate isopropylamine salt by manganese sulfate), the following composition is prepared (the percentages are in weight by weight) :

- aqueous solution of manganese sulfate at 34 %  
in weight by weight (corresponding to 11 % of Mn) : 44 %
- copra oil sucroglycerides : 5 %
- 10 - sodium lauryl ether sulfate (with 3 OE units) : 5 %
- monopropylene glycol : 9 %
- demineralised water : 37 %

The composition has a pH of 5.6.

The composition was stable :

- 15 - for more than 2 months at 45°C
- for more than 2 months in temperature  
cycles : 24 h at 0°C  
24 h at + 45°C.

The composition was homogeneous and did not separate  
20 into different phases on storage during a long time. By dilution  
with water it gave a stable opalescent solution.

**EXAMPLE 26****Composition based on manganese**

Using the procedure described in Example 1

25 (with replacing the glyphosate isopropylamine salt by manganese  
disodium salt of EDTA), the following composition is prepared (the  
percentages are in weight by weight) :

- aqueous solution of manganese disodium salt  
of EDTA at 35 % in weight by weight  
(corresponding to 5 % of Mn) : 50 %
- copra oil sucroglycerides : 10 %
- 5 - phosphate of ethoxylated fatty alcohol (with 6 OE)  
neutralised with potassium hydroxide : 10 %
- phosphate of ethoxylated fatty alcohol (with 6 OE) : 10 %
- demineralised water : 20 %

The composition has a pH of 4.4.

10

The composition was stable :

- for more than 2 months at 45°C
- for more than 2 months in temperature  
cycles : 24 h at 0°C  
24 h at + 45°C.

15

The composition was homogeneous and did not separate into different phases on storage during a long time. By dilution with water it gave a stable opalescent solution.

#### EXAMPLE 27

##### Composition based on manganese

20

Using the procedure described in Example 1

(with replacing the glyphosate isopropylamine salt by manganese disodium salt of EDTA), the following composition is prepared (the percentages are in weight by weight) :

- aqueous solution of manganese disodium salt  
of EDTA at 35 % in weight by weight  
(corresponding to 5 % of Mn) : 60 %
- copra oil sucroglycerides : 6 %

- phosphate of ethoxylated fatty alcohol (with 6 OE)  
neutralised with potassium hydroxide : 5 %
- phosphate of ethoxylated fatty alcohol (with 6 OE) : 5 %
- demineralised water : 24 %

5 The composition has a pH of 4.7.

The composition was stable :

- for more than 2 months at 45°C
- for more than 2 months in temperature  
cycles : 24 h at 0°C

10 24 h at + 45°C.

The composition was homogeneous and did not separate into different phases on storage during a long time. By dilution with water it gave a stable opalescent solution.

#### EXAMPLE 28

#### 15 Composition based on manganese

Using the procedure described in Example 1

(with replacing the glyphosate isopropylamine salt by manganese disodium salt of EDTA), the following composition is prepared

(the percentages are in weight by weight) :

- 20 - aqueous solution of manganese disodium salt  
of EDTA at 35 % in weight by weight  
(corresponding to 5 % of Mn) : 72 %
- copra oil sucroglycerides : 3,6 %
- phosphate of ethoxylated fatty alcohol (with 6 OE)
- 25 neutralised with potassium hydroxide : 3 %
- phosphate of ethoxylated fatty alcohol (with 6 OE) : 3 %
- monopropylene glycol : 5 %
- demineralised water : 13,4 %

The composition has a pH of 4.9.

The composition was stable :

- for more than 2 months at 45°C
- for more than 2 months in temperature

5

cycles : 24 h at 0°C

24 h at + 45°C.

The composition was homogeneous and did not separate into different phases on storage during a long time. By dilution with water it gave a stable opalescent solution.

10

15

20

25

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. Aqueous compositions of water-soluble plant-protection active substance, characterised in that they contain at least one water-soluble plant-protection active substance, sucroglycerides, at least one surfactant and water.

2. Compositions according to claim 1, characterised in that the water-soluble plant-protection active substance is selected from the soluble salts of the various parent substances mentioned below, obtained by neutralising the acid functions of glyphosate, of glufosinate of 2,4-D, of 2,4-DES, of MCPA, of mécoprop, of acifluorfen, of clopyralid or of MSMA with an alkali metal hydroxide, an amine or an alkanolamine, or by neutralising the amine functions of guazatine or of paraquat using an inorganic acid such as hydrochloric acid or sulphuric acid or an organic acid such as acetic acid.

3. Compositions according to one of claims 1 and 2, characterised in that the water-soluble plant-protection active substance is selected from:

- glyphosate, in the form of its isopropylamine salt or its sodium salt,
- glufosinate, in the form of its ammonium salt,
- 2,4-D, in the form of its 2-hydroxyethyl-ammonium, dimethylammonium or tris(2-hydroxyethyl-ammonium) salt,

- 2,4-DES, in the form of its sodium salt,
- guazatine, in the form of its triacetate,
- MCPA, in the form of its sodium, potassium or dimethylammonium salt,

5           - mécoprop, in the form of its sodium or potassium salt,

          - acifluorfen, in the form of its sodium or potassium salt,

10           - clopyralid, in the form of a 2-hydroxy-ethylammonium or potassium salt,

          - MSMA, in the form of its sodium salt,

          - paraquat, in the form of its dichloride or its bis(methyl sulphate).

15           4. Compositions according to claim 1, characterised in that the water-soluble plant-protection active substance is selected from micronutrients in the form of water-soluble metallic salts or chelates.

20           5. Compositions according to one of claims 1 or 4, characterised in that the water-soluble plant-protection active substance is selected from :

- manganese sulphate,
- magnesium sulphate,
- the manganese complex of the disodium salt of ethylenediamine tetraacetic acid (EDTA),
- 25   - the copper complex of the disodium salt of EDTA,
- the zinc complex of the disodium salt of EDTA,
- the cobalt complex of the disodium salt of EDTA,
- the manganese complex of the dipotassium salt of EDTA.

## 6. Compositions according to one of claims

- 5 1 to 5, characterised in that the sucroglycerides originate from the transesterification of triglycerides, preferably natural triglycerides, with sucrose.

## 7. Compositions according to one of claims

- 10 1 to 6, characterised in that the triglycerides employed for the preparation of the sucroglycerides are selected from natural triglycerides such as lard, tallow, groundnut oil, butter oil, cotton seed oil, linseed oil, olive oil, palm oil, grape pip oil, fish  
15 oil, soybean oil, castor oil, rapeseed oil, copra oil and coconut oil.

## 8. Compositions according to one of claims

- 1 to 7, characterised in that they contain from 0.1 % to 40 % by weight of sucroglycerides relative to the  
20 total weight of the composition, and preferably from 1 % to 30 % weight/weight.

9. Compositions according to one of claims  
 5 1 to 8, characterised in that the surfactants which  
 they contain are ionic and/or nonionic.

10. Compositions according to claim 9,  
 characterised in that the ionic surfactants are anionic  
 surfactants such as:

- 10 - phosphoric esters of alkoxyated fatty alcohols, of  
 alkoxyated fatty acids, of alkoxyated alkylphenols,  
 of alkoxyated bis(1-phenylethyl)phenols, of  
 alkoxyated tris(1-phenylethyl)phenols;
- sulphuric esters of alkoxyated fatty alcohols, of  
 15 alkoxyated alkylphenols, of alkoxyated bis(1-  
 phenylethyl)phenols, of alkoxyated tris(1-  
 phenylethyl)phenols;
- the unesterified function or functions of the  
 phosphoric acid or sulphuric acid can be in acid form  
 20 or in the form of a sodium, potassium, ammonium, amine  
 or alkanolamine salt;
- alkylarylsulfonates such as alkylbenzene-sulfonates and  
 alkylnaphtalene-sulfonates of sodium, potassium, calcium,  
 ammonium, amine or alkanolamine ;
- 25 - alkylsulfates of sodium, potassium, ammonium, amine or  
 alkanolamine ;
- alkyl(polyoxyalkylene)sulfates of sodium, potassium, ammonium,  
 amine or alkanolamine.

11. Compositions according to claim 10,  
 characterised in that the alkoxy units of the anionic  
 surfactants are oxyethylene and/or oxypropylene units,  
 which vary in number from 2 to 100 and preferably from  
 4 to 50.



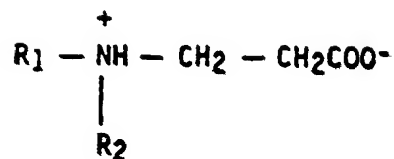
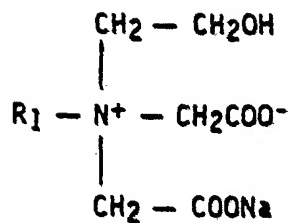
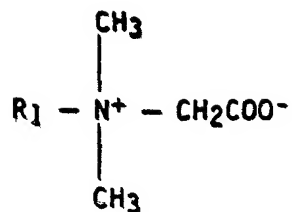
12. Compositions according to one of claims 10 and 11, characterised in that the anionic surfactants are selected from:

- the triethanolamine salts of the phosphoric monoester and diester of ethoxylated tris(1-phenylethyl)phenol with 16 OE units,
- 5 - the potassium salts of the phosphoric monoester and diester of ethoxylated tris(1-phenylethyl)phenol with 16 OE units,
- the acid sulphate of ethoxylated bis(1-phenylethyl)-phenol with 11 OE units,
- 10 - the potassium salt of the sulphuric monoester of ethoxylated bis(1-phenylethyl)phenol with 15 OE units,
- the triethanolamine salt of the sulphuric monoester of ethoxylated bis(1-phenylethyl)phenol with 11 OE units,
- 15 - the ammonium salt of the sulphuric monoester of ethoxylated tris(1-phenylethyl)phenol with 16 OE units,
- the acid phosphate of ethoxylated nonylphenol with 9 OE units,
- the dodecylbenzene sulfonate of sodium,
- 20 - the methylnaphtalene sulfonate of sodium,
- the lauryl sulfate of sodium,
- the lauryl ether sulfate of sodium with 3 OE units.

13. Compositions according to claim 9, characterised in that the ionic surfactants are

25 cationic or amphoteric surfactants such as betaines and imidazolines.

14. Compositions according to claim 13, characterised in that the betaines are amphoteric surfactants of the following formulae:



in which:

- $\text{R}_1$  represents a linear or branched alkyl group having 3 to 18 carbon atoms, such as, for example, propyl, dodecyl or hexadecyl, or an alkanamido group such as, for example, dodecanamide,
- $\text{R}_2$  represents a hydrogen atom or a propionate group.

15. Compositions according to claim 13, characterised in that the imidazolines are compounds derived from imidazoline containing a linear or branched alkyl or alkenyl substituent having 6 to 20 carbon atoms on the carbon at the 2-position of the

imidazoline ring and containing on the nitrogen atom at the 1-position one or more substituents such as hydroxyl, sodium alkanolate, hydroxyalkyl, sodium alkylcarboxylate, sodium alkoxyalkylcarboxylate or  
 5 sodium hydroxyalkylsulphonate.

16. Compositions according to claim 9, characterised in that the nonionic surfactants are selected from:

- alkoxyated triglycerides,
- 10 - alkoxyated sorbitan esters,
- alkoxyated fatty acids,
- alkoxyated fatty alcohols,
- alkoxyated fatty amines,
- alkoxyated bis(1-phenylethyl)phenols,
- 15 - alkoxyated tris(1-phenylethyl)phenols,
- alkoxyated alkylphenols.

17. Compositions according to claim 16, characterised in that the alkoxy units of the nonionic surfactants are oxyethylene and/or oxypropylene units,  
 20 which vary in number from 2 to 100 and preferably from 4 to 50.

18. Compositions according to one of claims 16 and 17, characterised in that:  
 - the alkoxyated triglycerides are ethoxylated  
 25 triglycerides of vegetable or animal origin, such as lard, tallow, groundnut oil, butter oil, cotton seed oil, linseed oil, olive oil, palm oil, grape pip oil, fish oil, soybean oil, castor oil, rapeseed oil, copra

oil, coconut oil;

- the alkoxyated fatty acids are ethoxylated esters of fatty acids such as oleic acid, stearic acid;

- the alkoxyated sorbitan esters are ethoxylated

5 cyclised sorbitol esters of  $C_{10}$  to  $C_{20}$  fatty acids such as lauric acid, stearic acid or oleic acid;

- the alkoxyated fatty amines have from 10 to 22 carbon atoms;

- the alkoxyated fatty alcohols have from 6 to 22  
10 carbon atoms;

- the alkoxyated alkylphenols have 1 or 2 linear or branched alkyl groups having 4 to 12 carbon atoms.

19. Compositions according to one of claims

16 and 17, characterised in that the nonionic

15 surfactants are selected from:

- ethoxylated bis(1-phenylethyl)phenol with 5 OE units,

- ethoxylated bis(1-phenylethyl)phenol with 10 OE units,

- ethoxylated tris(1-phenylethyl)phenol with 16 OE  
20 units,

- ethoxylated tris(1-phenylethyl)phenol with 20 OE units,

- ethoxylated tris(1-phenylethyl)phenol with 25 OE units,

25 - ethoxylated tris(1-phenylethyl)phenol with 40 OE units,

- ethoxy/propoxylated tris(1-phenylethyl)phenols with 25 OE + OP units,

- ethoxy/propoxylated nonylphenols with 25 OE + OP units,
- ethoxy/propoxylated nonylphenols with 30 OE + OP units,
- 5 - ethoxy/propoxylated nonylphenols with 40 OE + OP units,
- ethoxy/propoxylated nonylphenols with 55 OE + OP units,
- ethoxy/propoxylated nonylphenols with 80 OE + OP
- 10 units.

20. Compositions according to one of claims 1 to 19, characterised in that the amount of surfactant used is such that the weight ratio surfactant/sucroglycerides is not less than 0.8 and is preferably from 1 to 5.

21. Compositions according to one of claims 1 to 20, characterised in that they contain, apart from the active substance, sucroglycerides, surfactants and water, various other constituents such as:

- an antifreeze,
- an antifoam such as organopolysiloxanes, for example,
- a wetting agent,
- a thickening agent,
- 25 - and auxiliary additives.

22. Compositions according to one of claims 1 to 21, characterised in that the proportions of their main constituents, in weight relative to the total

weight of the composition, are as follows:

- from 1 % to 60 % and preferably from 2 % to 40 % of plant-protection active substance,
- from 0.1 % to 40 %, and preferably from 1 % to 30 % of sucroglycerides,
- from 0.1 % to 40 %, and preferably from 1 % to 30 %, of ionic and/or nonionic surfactant,
- and water q.s.

23. Process for preparing the compositions according to one of claims 1 to 22, characterised in that:
- on the one hand, the plant-protection active substance is dissolved in water,
  - on the other hand, a mixture of the sucroglycerides, the ionic and/or nonionic surfactant or surfactants and the possible other additives in water is prepared with stirring,
  - the antifreeze, when present, is added with stirring to the emulsion of sucroglycerides,
  - the solution of active substance is thereafter introduced into the emulsion of sucroglycerides.

24. Use of compositions according to one of claims 1 to 22 for the treatment of plants, where appropriate after dilution with water or after mixing with aqueous suspensions, aqueous emulsions or aqueous suspo-emulsions of other active substances.

25. An aqueous composition of water-soluble plant-protection active substance substantially as herein described with reference to the examples.

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**ABSTRACT**

The present invention relates to new plant-protection compositions and to their use for the treatment of plants.

5 More specifically, it hence relates in the first place, to aqueous compositions of water-soluble plant-protection active substance, characterised in that they contain at least one water-soluble plant-protection active substance, sucroglycerides, at least one surfactant and water.

10 These compositions are used for the treatment of plants, where appropriate after dilution with water or after mixing with aqueous suspensions, aqueous emulsions or aqueous suspo-emulsions of other active substances.